

### FEATURES

- 1.25 Gb/s differential output TIA
- DC to 1000 MHz bandwidth
- +3.3V Operation
- -27dBm Typical sensitivity
- 1250-1620nm PIN Photodetector
- Automatic Gain Control (AGC)
- 0dBm Optical Overload

### APPLICATIONS

- Gigabit Ethernet (1.25 Gb/s)
- Fiber Channel (1.0625 Gb/s)
- FTTx systems



TO-46 4 pin Ball Lens Package

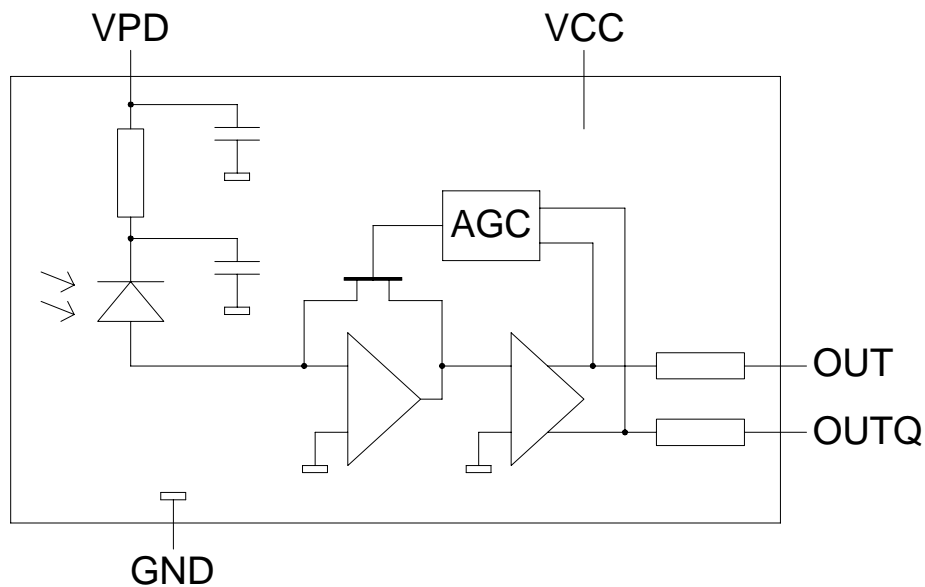


TO-46 5 pin Ball Lens Package

### Product Description

The ANADIGICS AMT8210, packaged in a TO46 lens can, is a 3.3V integrated photodetector and transimpedance amplifier (TIA) used to convert a long wavelength (1250 to 1620nm) optical input signal into a differential output voltage. The

AMT8210 has a bandwidth of 900MHz and a dynamic range of over 27dB. These devices are readily designed into receivers, transceivers and transponders for Gigabit Ethernet and Fiber Channel applications.



(For the 4 pin header VPD and VCC are connected to the same pin)

**Figure 1: Functional Block Diagram**

## ELECTRICAL CHARACTERISTICS

Table 1: Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Supply Voltage	-0.5	+3.8	V
Optical Input Power	-	+ 3	dBm
Storage Temperature	- 40	+ 125	°C

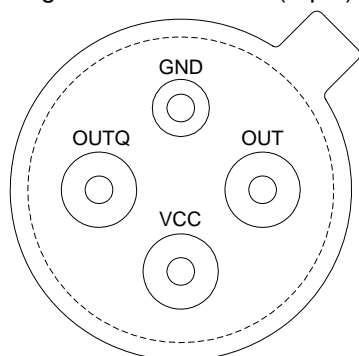
Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Table 2: Electrical Specifications

PARAMETER	MIN	TYP	MAX	UNIT
Wavelength	1250	-	1620	nm
Detector Active Area	-	75	-	um
Sensitivity <sup>(1)</sup>	-25.0	-27	-	dB
Overload		0	-	dBm
Responsivity 1550nm	-	0.95	-	A/W
Responsivity 1310nm	-	0.85	-	A/W
Small signal transimpedance gain (50 Ω)	-	9.1	-	KΩ
Small signal 3dB bandwidth	800	1000	-	MHz
Output resistance		50		Ω
Output voltage swing (differential)			500	mV <sub>P-P</sub>
TIA supply voltage	2.97	3.3	3.6	V
TIA supply current	-	21		mA
Power consumption	-	70		mW
Operating temperature	-40	+25	+85	°C

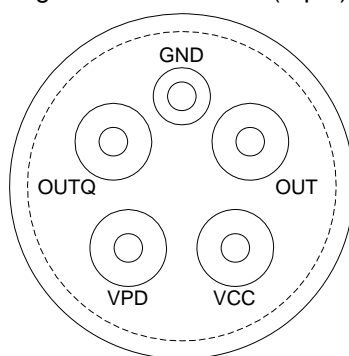
(1) 1.25Gb/s PRBS 2<sup>31</sup>-1, 1550nm, ER >12dB, BER 10<sup>-10</sup>

Figure 2: Pin location (4-pin)



(Bottom View)

Figure 3: Pin location (5-pin)



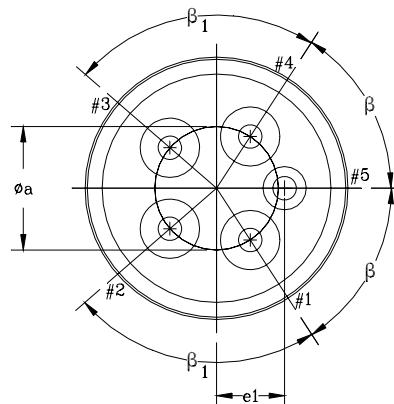
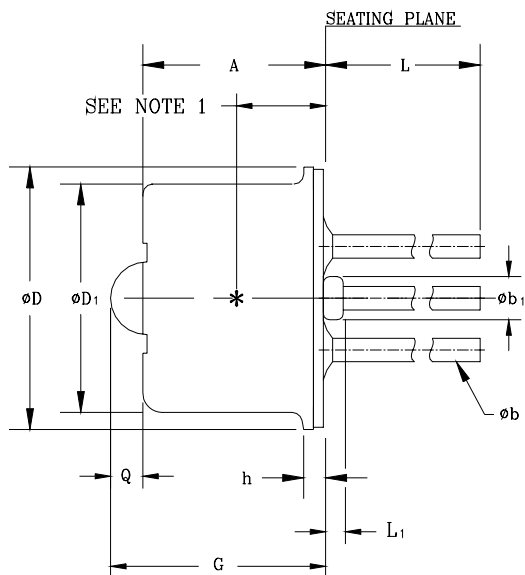
(Bottom View)

Table 3: Pin description

NAME	DESCRIPTION
OUT	TIA Output (Non-Inverted)
VCC	Supply Voltage (+3.3V)
OUTQ	TIA Output (Inverted)
GND	Ground

# AMT8210

## PACKAGE DIMENSIONS – 5 Pin TO-46



**BOTTOM VIEW**

### MM CONTROLLING DIMENSIONS

SYMBOL	MILLIMETERS		INCHES		NOTE
	MIN.	MAX.	MIN.	MAX.	
øa	2.54 T.P.		0.100 T.P.		—
A	3.55	4.00	0.140	0.157	—
øb	0.40	0.50	0.016	0.020	—
øb1	—	1.20	—	0.047	—
øD	5.38	5.54	0.212	0.218	—
øD1	4.60	4.75	0.181	0.187	—
e1	1.40 T.P.		0.055 T.P.		—
G	4.10	4.75	0.161	0.187	—
h	0.35	0.56	0.014	0.022	—
L	12.50	14.50	0.490	0.570	—
L1	—	0.40	—	0.016	—
Q	0.55	0.75	0.022	0.030	—
β	57° NOMINAL		57D NOMINAL		—
β1	82° NOMINAL		82° NOMINAL		—

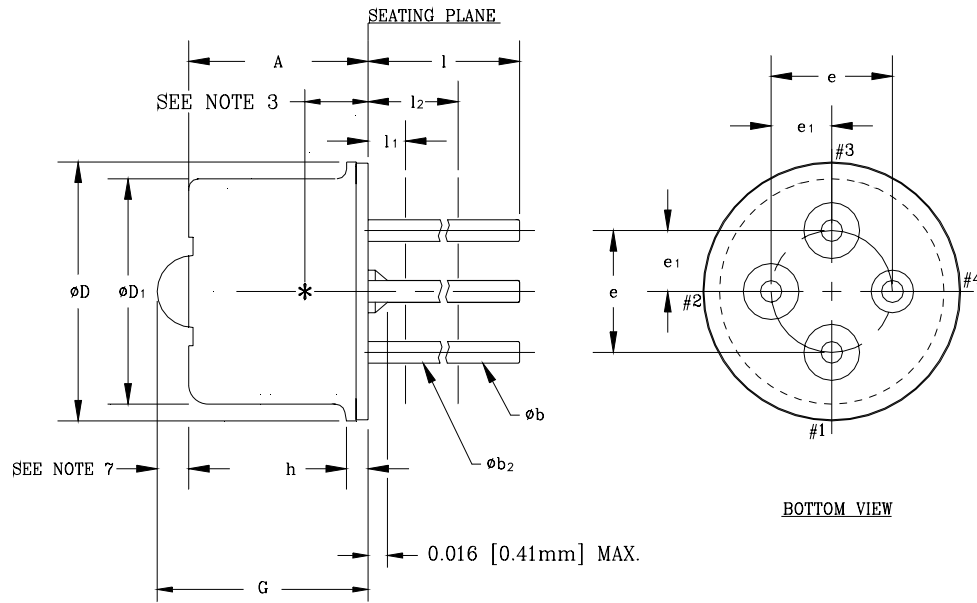
### NOTES:

1. INTERNAL OPTICAL HEIGHT =  $1.27 \pm 0.08 \text{mm}$  [ $0.050 \pm 0.003 \text{in.}$ ]
2. DETECTOR DIODE PLACEMENT ACCURACY:  $\pm 0.15 \text{mm}$  [ $\pm 0.006 \text{in.}$ ] WITH RESPECT TO CENTER OF HEADER.
- 3 BENT LEADS SHOULD NOT EXTEND OUTSIDE DIAMETER (øD) OF CAP OR TOUCH EACH OTHER.

# AMT8210



## PACKAGE DIMENSIONS – 4 Pin TO-46



### MM CONTROLLING DIMENSIONS

SYMBOL	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	--	0.160	--	4.00	
øb	0.016	0.020	0.41	0.51	1
øb <sub>2</sub>	0.012	0.019	0.30	0.48	1
øD	0.212	0.218	5.38	5.54	
øD <sub>1</sub>	0.181	0.187	4.60	4.75	
e	0.100	T.P.	2.54	T.P.	2
e <sub>1</sub>	0.050	T.P.	1.27	T.P.	2
h	0.014	0.022	0.36	0.56	
l	0.500	0.540	12.70	13.70	1
l <sub>1</sub>	--	0.050	--	1.27	1
l <sub>2</sub>	0.250	--	6.35	--	1
G	--	0.190	--	4.66	7

### NOTES:

- (FOUR LEADS) øb<sub>2</sub> APPLIES BETWEEN l<sub>1</sub> AND l<sub>2</sub>. øb APPLIES BETWEEN l<sub>2</sub> AND 0.5 [12.70mm] FROM SEATING PLANE. DIAMETER IS UNCONTROLLED IN l<sub>1</sub> AND BEYOND 0.5 [12.70mm] TO END OF PIN.
- MAXIMUM DIAMETER LEADS AT A GAGING PLANE 0.054 [1.37mm]+0.001 [0.025mm] -0.000 [0.000mm] BELOW SEATING PLANE TO BE WITHIN 0.007 [0.178mm] OF THEIR TRUE POSITION RELATIVE TO MAXIMUM-WIDTH TAB AND TO THE MAXIMUM 0.212 [5.40mm] DIAMETER MEASURED WITH A SUITABLE GAGE. WHEN GAGE IS NOT USED, MEASUREMENT WILL BE MADE AT 0.250 [6.35mm] FROM SEATING PLANE.
- INTERNAL OPTICAL HEIGHT = 0.065±0.005[1.65±0.1]
- BENT LEADS SHOULD NOT EXTEND OUTSIDE DIAMETER (øD) OF CAP OR TOUCH EACH OTHER.
- ALL DIMENSIONS ARE REFERENCE ONLY-EXCEPT A, D & h.
- DETECTOR DIODE PLACEMENT ACCURACY: ±0.15mm[0.006] WITH RESPECT TO CENTER OF HEADER: REFERENCE ONLY
- LENS HEIGHT = 0.65±0.1 [0.026±0.004]

## ORDERING INFORMATION

Part Number	PACKAGE DESCRIPTION
AMT8210T46L4	4 pin TO-46 Lens Package
AMT8210T46L5	5 pin TO-46 Lens Package

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